Environmental Risk Assessment of Engineered Nanomaterials

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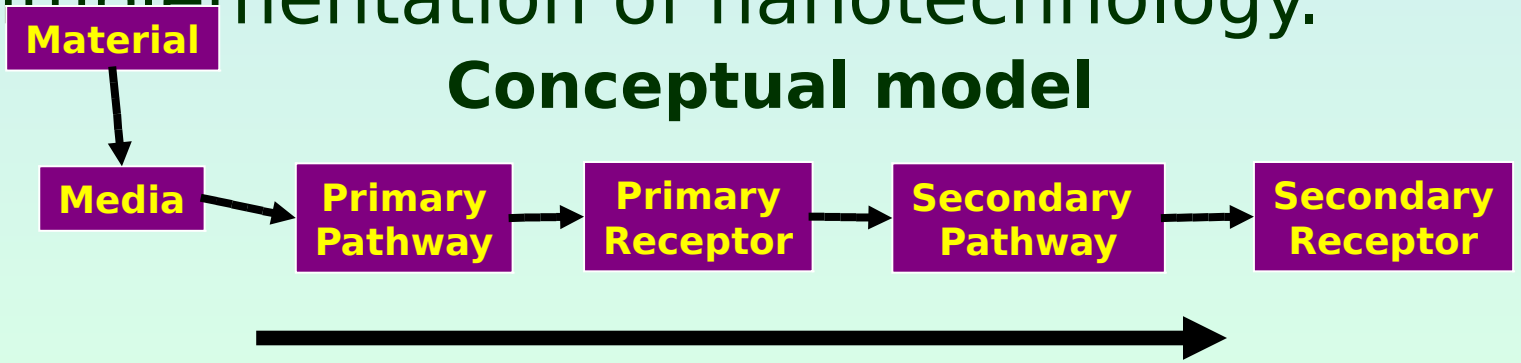
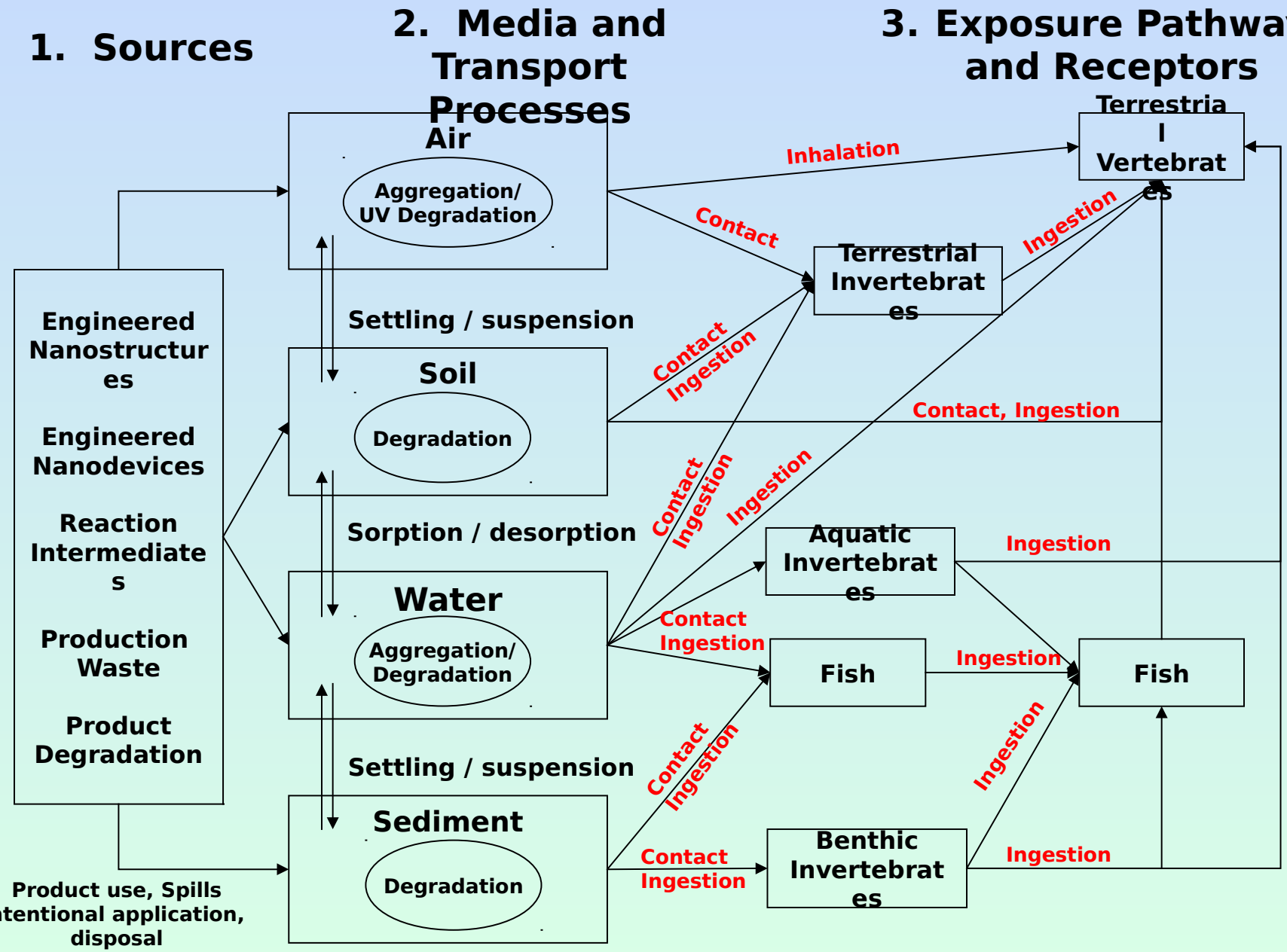
Nanomaterials Risk Assessment

- Meet environmental sustainability objectives by identifying and quantifying the environmental attributes of nanomaterials.
  - Sources of nanomaterials?
  - Fate and transport mechanisms?
  - Likely exposure scenarios?
  - Biological effects resulting from exposure?
- Proactively support the development and implementation of nanotechnology.



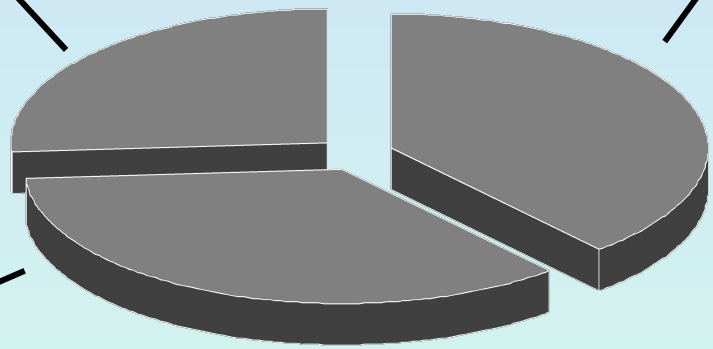
Conceptual Model



ERDC Research Efforts

1. Relevant Vectors for Exposure (2 yr):
Focus: Role of functionalization on the availability and toxicity of CNT
Unique:
1) CNT Only (PEG, NH3, COOH)
2) Aquatic toxicity

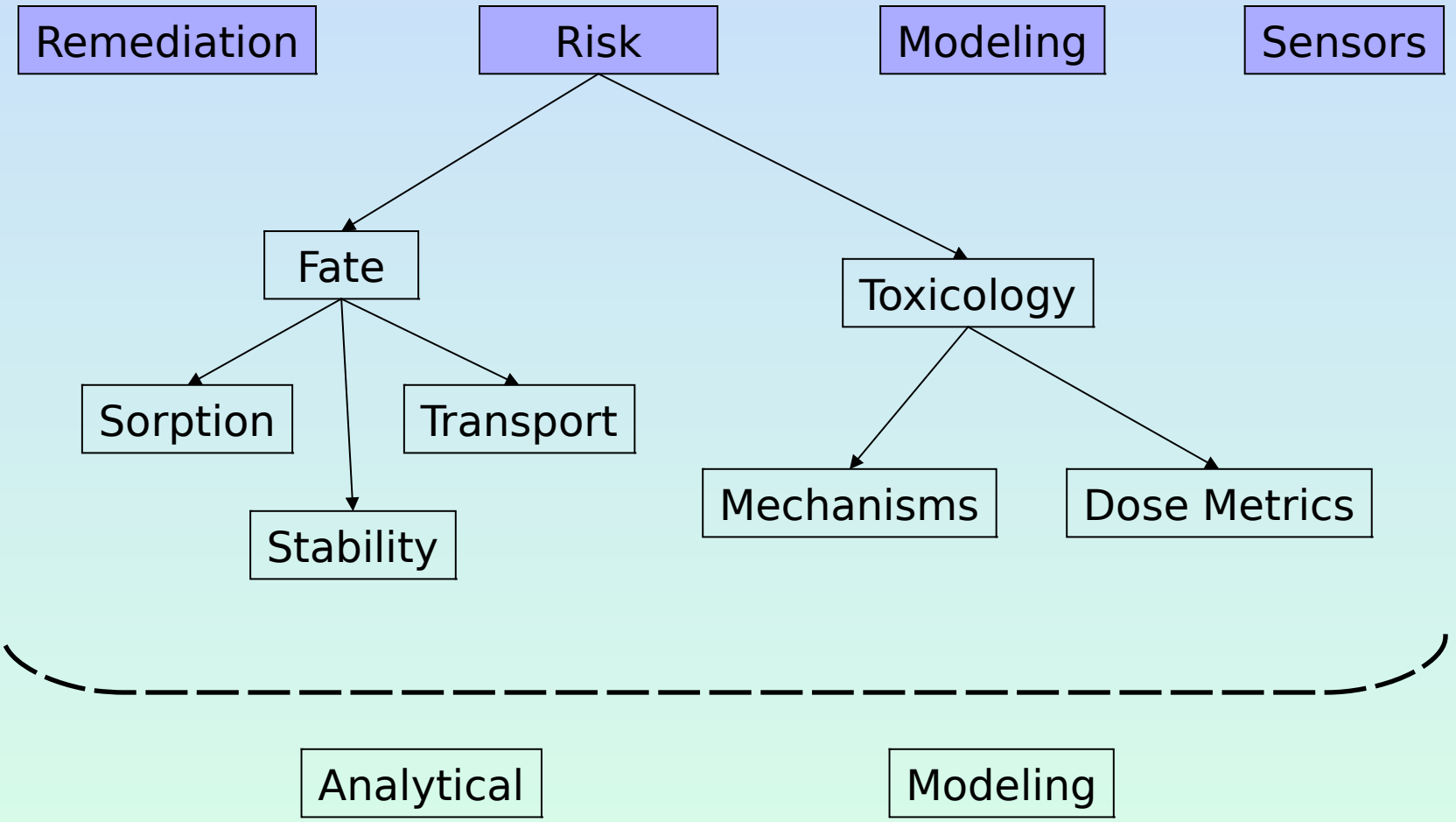
3. Nanomaterial Program (7 yr):
Focus: Characterization and classification of nanomaterials
Unique:
1) Characterization
2) Goal to establish classification system



2. Nanomaterial Structure Affect Biota? (2 yr):
Focus: Biological effects of different nanomaterials
Unique:
1) CNT, Fullerene, Metal Oxide, Reaction intermediates
2) Measures of bioavailability/Toxicity

Shared:
1) Materials (7 total) and cost for synthesis
2) Characterization information

ERDC


Remediation
Risk
Modeling
Sensors
Fate
Toxicology
Sorption
Transport
Stability
Mechanisms
Dose Metrics
Analytical
Modeling